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NOTICE OF ALLOWANCE AND FEE(S) DUE

33942 7590 10/04/2004
CHA & REITER, LLC
210 ROUTE 4 EAST STE 103
PARAMUS, NJ 07652

EXAMINER	
HAROLD, JEFFEREY F	
ART UNIT	PAPER NUMBER
2644	4
DATE MAILED: 10/04/2004	

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/471,820	12/23/1999	KYUNG-HWAN KIM	P992040	7993

TITLE OF INVENTION: MULTIFUNCTIONAL ANALOG TRUNK CIRCUIT

APPLN. TYPE	SMALL ENTITY	ISSUE FEE	PUBLICATION FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	NO	\$1370	\$0	\$1370	01/04/2005

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. **PROSECUTION ON THE MERITS IS CLOSED.** THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN **THREE MONTHS** FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. **THIS STATUTORY PERIOD CANNOT BE EXTENDED.** SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE REFLECTS A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE APPLIED IN THIS APPLICATION. THE PTOL-85B (OR AN EQUIVALENT) MUST BE RETURNED WITHIN THIS PERIOD EVEN IF NO FEE IS DUE OR THE APPLICATION WILL BE REGARDED AS ABANDONED.

HOW TO REPLY TO THIS NOTICE:

I. Review the SMALL ENTITY status shown above.

If the SMALL ENTITY is shown as YES, verify your current SMALL ENTITY status:

- A. If the status is the same, pay the TOTAL FEE(S) DUE shown above.
- B. If the status above is to be removed, check box 5b on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and twice the amount of the ISSUE FEE shown above, or

If the SMALL ENTITY is shown as NO:

- A. Pay TOTAL FEE(S) DUE shown above, or
- B. If applicant claimed SMALL ENTITY status before, or is now claiming SMALL ENTITY status, check box 5a on Part B - Fee(s) Transmittal and pay the PUBLICATION FEE (if required) and 1/2 the ISSUE FEE shown above.

II. PART B - FEE(S) TRANSMITTAL should be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). Even if the fee(s) have already been paid, Part B - Fee(s) Transmittal should be completed and returned. If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail**

**Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
(703) 746-4000**

or **Fax**

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

33942 7590 10/04/2004

**CHA & REITER, LLC
210 ROUTE 4 EAST STE 103
PARAMUS, NJ 07652**

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (703) 746-4000, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

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nonprovisional	NO	\$1370	\$0	\$1370	01/04/2005

EXAMINER	ART UNIT	CLASS-SUBCLASS
HAROLD, JEFFEREY F	2644	379-333000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).
☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
 (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
 (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are enclosed:

- ☐ Issue Fee
☐ Publication Fee (No small entity discount permitted)
☐ Advance Order - # of Copies _____

4b. Payment of Fee(s):

- ☐ A check in the amount of the fee(s) is enclosed.
☐ Payment by credit card. Form PTO-2038 is attached.
☐ The Director is hereby authorized by charge the required fee(s), or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ a. Applicant claims SMALL ENTITY status. See 37 CFR 1.27. ☐ b. Applicant is no longer claiming SMALL ENTITY status. See 37 CFR 1.27(g)(2).

The Director of the USPTO is requested to apply the Issue Fee and Publication Fee (if any) or to re-apply any previously paid issue fee to the application identified above. NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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EXAMINER
HAROLD, JEFFEREY F

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DATE MAILED: 10/04/2004

Determination of Patent Term Extension under 35 U.S.C. 154 (b) (application filed after June 7, 1995 but prior to May 29, 2000)

The Patent Term Extension is 0 day(s). Any patent to issue from the above-identified application will include an indication of the 0 day extension on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Extension is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (703) 305-1383. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.



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33942	7590	10/04/2004		
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652				
			EXAMINER HAROLD, JEFFEREY F	
			ART UNIT 2644	PAPER NUMBER 4
DATE MAILED: 10/04/2004				

Notice of Fee Increase on October 1, 2004

If a reply to a "Notice of Allowance and Fee(s) Due" is filed in the Office on or after October 1, 2004, then the amount due will be higher than that set forth in the "Notice of Allowance and Fee(s) Due" because some fees will increase effective October 1, 2004. See Revision of Patent Fees for Fiscal Year 2005; Final Rule, 69 Fed. Reg. 52604, 52606 (May 10, 2004).

The current fee schedule is accessible from WEB site (<http://www.uspto.gov/main/howtofees.htm>).

If the fee paid is the amount shown on the "Notice of Allowance and Fee(s) Due" but not the correct amount in view of the fee increase, a "Notice of Pay Balance of Issue Fee" will be mailed to applicant. In order to avoid processing delays associated with mailing of a "Notice of Pay Balance of Issue Fee," if the response to the Notice of Allowance is to be filed on or after October 1, 2004 (or mailed with a certificate of mailing on or after October 1, 2004), the issue fee paid should be the fee that is required at the time the fee is paid. See Manual of Patent Examining Procedure (MPEP), Section 1306 (Eighth Edition, Rev. 2, May 2004). If the issue fee was previously paid, and the response to the "Notice of Allowance and Fee(s) Due" includes a request to apply a previously-paid issue fee to the issue fee now due, then the difference between the issue fee amount at the time the response is filed and the previously-paid issue fee should be paid. See MPEP Section 1308.01.

Effective October 1, 2004, 37 CFR 1.18 is amended by revising paragraphs (a) through (c) to read as set forth below.

Section 1.18 Patent post allowance (including issue) fees.

- (a) Issue fee for issuing each original or reissue patent, except a design or plant patent:
 - By a small entity (Sec. 1.27(a))..... \$685.00
 - By other than a small entity..... \$1,370.00
- (b) Issue fee for issuing a design patent:
 - By a small entity (Sec. 1.27(a))..... \$245.00
 - By other than a small entity..... \$490.00
- (c) Issue fee for issuing a plant patent:
 - By a small entity (Sec. 1.27(a))..... \$330.00
 - By other than a small entity..... \$660.00

Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at (703) 305-8283.

Notice of Allowability

Application No.

09/471,820

Examiner

Jefferey F Harold

Applicant(s)

KIM ET AL.

Art Unit

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to application filed 12/23/99.
2. ☒ The allowed claim(s) is/are 1-8.
3. ☒ The drawings filed on 23 December 1999 are accepted by the Examiner.
4. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☒ All b) ☐ Some* c) ☐ None of the:
 1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 6. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|--|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____. |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____. |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Allowable Subject Matter

2. ***Claims 1-8*** are allowed.
3. The following is an examiner's statement of reasons for allowance:

Regarding **claim 1**, Fujiwara (United States Patent 4,756,018) and applicant's admitted prior art disclose a multifunctional analog trunk circuit (TRK) provided in a switching system connected with a central office line, the TRK circuit being connectable between (1) a tip terminal and a hybrid circuit and codec of a switching circuit the TRK circuit comprising: a first relay connectable with the tip terminal of the switching system; a second relay for connectable with a ring terminal of the switching system; a transformer comprising a primary coil and a secondary coil, a ring path connected for transferring a ring signal coming from the central office, a tip ground detection circuit connected for detecting a grounding of the tip terminal in the ground start TRK mode, a bridge diode connected in parallel the primary coil of the transformer for full-wave rectification of a signal transferred through the ring path, however the prior art of record failed to disclose or fairly suggest a configuration wherein the first and second relay provide control of a polarity reverse in a direct inward dialing tie line trunk mode; a transformer wherein the upper end of the secondary coil is connectable with the codec and hybrid circuits of the switching circuit and a lower end of the secondary coil is

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grounded; a third relay connected between an output of the first relay and an upper end of the primary coil of the transformer for occupying a loop in one of a loop and a ground start TRK mode; a fourth relay driven in the ground start TRK mode, and fourth relay being cut off when the third relay occupies the loop; a fifth relay connected with an output of the second relay to be driven in the ground start TRK mode, a sixth relay connected between the ring path and the bridge diode; a seventh relay connected between the bridge diode and the output of the second relay; the sixth relay and the seventh relay for providing dial pulses in the loop or ground start TRK mode; a bypass circuit connected with an output of the bridge diode to bypass a direct current voltage output of the bridge diode in the loop or ground start TRK mode; a ring and HOS detection circuit connected with the bypass circuit for detecting the ring and HOS signal in the loop or ground start TRK mode, and the HOS signal in the DID TRK mode; a feeding circuit connected with the "M" terminal for grounding the "M" terminal when idle and for supplying the source voltage to the "M" terminal and E&M TRK mode; and an HOS signal detection circuit connected with the "E" terminal to detect the HOS signal in the E&M TRK mode.

Regarding **claim 6**, Fujiwara and applicant's admitted prior art disclose a multifunctional analog trunk circuit (TRK) provided in a switching system connected with a central office line, the TRK circuit being connectable between a tip terminal and a hybrid circuit and codec of a switching circuit the TRK circuit comprising: a first relay connectable with the tip terminal of the switching system; a second relay for connectable with a ring terminal; a transformer comprising a primary coil and a

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secondary coil, a ring path connected for transferring a ring signal coming from the central office, a tip ground detection circuit connected for detecting a grounding of the tip terminal in the ground start TRK mode, a bridge diode connected in parallel the primary coil of the transformer for full-wave rectification of a signal transferred through the ring path, however the prior art of record failed to disclose or fairly suggest a configuration wherein the first and second relay provide control of a ring signal in ring down TRK mode; a transformer wherein the upper end of the secondary coil is connectable with the codec and hybrid circuits of the switching circuit; a third relay connected between an out of the first relay and an upper end of the primary coil of the transformer for occupying a loop in one of a loop in one of a loop and ring down TRK mode; and fourth relay connected between the ring path and the bridge diode; a fifth relay connected between the bridge diode and the output of the second relay; the fourth and fifth relay provide dial pulses in the loop, ring down or both way TRK mode; a bypass circuit connected with an output of the bridge diode to bypass a direct current voltage output of the bridge diode in the loop or both way TRK mode; a ring and HOS detection circuit connected with the bypass circuit for detecting the ring and HOS signal in the loop or ring down TRK mode, and the HOS signal in the both way TRK mode; a feeding circuit for supplying a prescribed source voltage to the fourth and fifth relays in the both way TRK mode, a sixth relay connected with the "M" terminal for supplying the source voltage to the "M" when idle, and for grounding the "M" terminal in the E&M TRK mode; and an HOS signal detection circuit connected with the "E" terminal to detect the HOS signal in the E&M TRK mode.

Regarding **claim 8**, Fujiwara (United States Patent 4,756,018) and applicant's admitted prior art disclose a multifunctional analog trunk circuit (TRK) provided in a switching system connected with a central office line, the TRK circuit being connectable between (1) a tip terminal and a hybrid circuit and codec of a switching circuit the TRK circuit comprising: a first relay connectable with the tip terminal of the switching system; a second relay for connectable with a ring terminal of the switching system; a transformer comprising a primary coil and a secondary coil, a ring path connected for transferring a ring signal coming from the central office, a tip ground detection circuit connected for detecting a grounding of the tip terminal in the ground start TRK mode, a bridge diode connected in parallel the primary coil of the transformer for full-wave rectification of a signal transferred through the ring path, however the prior art of record failed to disclose or fairly suggest a configuration wherein the first and second relay provide control of a polarity reverse in a direct inward dialing tie line trunk mode; a third relay connected with an output of the first relay, and the third relay is connectable with the primary coil of the transformer of the switching circuit for occupying a loop in one of a loop and a ground start TRK mode; a fourth relay driven in the ground start TRK mode, and fourth relay being cut off when the third relay occupies the loop; a fifth relay connected with an output of the second relay to be driven in the ground start TRK mode, a sixth relay connected between the ring path and the bridge diode; a seventh relay connected between the bridge diode and the output of the second relay; the sixth relay and the seventh relay for providing dial pulses in the loop or ground start TRK mode; a bypass circuit connected with the "M" terminal for grounding the "M" terminal

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when idle and for supplying the source voltage to the "M" terminal and E&M TRK mode; and an HOS signal detection circuit connected with the "E" terminal to detect the HOS signal in the E&M TRK mode.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jefferey F Harold whose telephone number is 703-306-5836. The examiner can normally be reached on Monday - Friday 9 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forester W Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jefferey F Harold
Examiner
Art Unit 2644

JFH
September 28, 2004



FORESTER W. ISEN
SUPERVISORY PATENT EXAMINER